Claims

[c1] 1. A method of detecting X-rays for obtaining improved radiographic images ranging from about 10keV to about 50keV, comprising the steps of:
orienting a semiconductor radiation detector having a height greater than its thickness, said detector comprising a substrate and pixel sensors formed as strips,
wherein said orienting step further comprises selecting an acute angle between a direction of incident radiation and a side of said detector having said height such that said incident radiation mainly hit the side of said radiation detector, said angle being selected to be less than about ten degrees, and
excluding at least one section of said hit area between at least one edge of said detector and at least one active sensor area, wherein substantially all of the energy of the radiation is dissipated within the detector.

[c2] 2. The method according to claim 1, further comprising the step of collimating using a collimator with a collimator slot to prevent the incident radiation to hit the edge the detector.

[c3] 3. An apparatus for detection of incident radiation for radiographic imaging, for applications ranging from about 10keV to 50keV, the apparatus comprising:
an X-ray detector comprising a plurality of semiconductor X-ray strips arranged on a substrate, said detector being of sufficient height to cause the dissipation of substantially all of the incident radiation within said detector,
electrical outputs for each of the strips, and
electrical connections between each of the semiconductor X-ray strips such that the output corresponding to corresponding points in each of the strips is combined,
wherein said X-ray detector is oriented relative to the incident radiation such that an acute angle is selected between a direction of said incident radiation and a side of said strip having said height such that said incident radiation mainly hit the side of said detector, said angle being less than ten (10)

degrees,

wherein the area exposed to the incident radiation excludes at least one section of said strip between at least one edge of said detector and at least one active sensor area and that substantially all of the energy from the incident radiation is dissipated within the detector.

[c4] 4. An apparatus according to claim 3 wherein said detector has a guard ring to sink leak current.

[c5] 5. An apparatus according to claim 3 wherein said thickness of the detector is between about 0.1 mm and about 1.0 mm.

[c6] 6. An apparatus according to claim 3 wherein said apparatus further comprises a collimator having a collimator slot for preventing the incident radiation from hitting the edge of the detector.

[c7] 7. An apparatus according to claim 6 wherein said apparatus comprises several detectors, each having a collimator slot placed side by side.

[c8] 8. An apparatus according to claim 7 further comprising an absorber placed between said detector for preventing scattering from one detector to another.

[c9] 9. An apparatus according to claim 3 wherein said detector is made of silicon.

[c10] 10. An apparatus according to claim 3 wherein said detector is made from the group consisting of gallium arsenide or CdZnTe.

[c11] 11. An apparatus according to claim 3 wherein said incident radiation hits a backside of the detector.

[c12] 12. Use of an apparatus for detection of incident radiation in scanned-slot medical imaging involving an apparatus according to claim 3.

[c13] 13. Use of an apparatus for detecting incident radiation in scanned-slot medical imaging according to claim 12, wherein the use of said medical

imaging is selected from the group consisting of mammography, bone densitometry and non-destructive testing.